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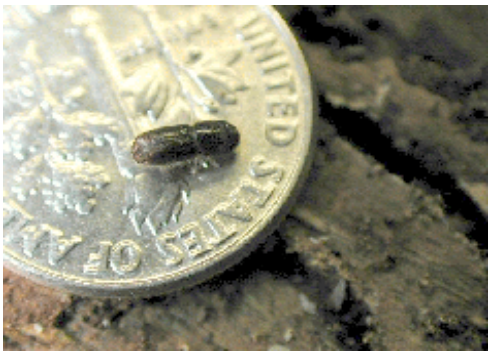
Forest Insect & Disease Leaflet

Ips Engraver Beetles

Twenty-five species of bark beetles in the genus *Ips* are currently recognized in the west. Each species differs slightly in appearance, life cycle, and host preference. Predominantly, *Ips* beetles attack pine and spruce. The species that attack spruces are generally different than the species that attack pines.

Damage occurs when adult beetles colonize and reproduce in the conductive tissues of suitable host trees. Conductive tissues transport water and nutrients throughout the tree. Female beetles construct a tunnel just under the bark to lay their eggs.



Adult beetle on dime

Adult beetle in egg gallery

After the eggs hatch, the larvae feed creating more tunnels that further destroy the tissue. The destruction of conductive tissues prevents the transport of water and nutrients throughout the tree--eventually killing the tree. The larvae then pupate and exit the tree as adult beetles. New adults will either re-attack uninfested portions of the same tree or attack another susceptible host tree.

When a beetle chews through the bark it produces red or orange boring dust. Successfully attacked trees will generally have this boring dust (frass) in bark crevices and/or around the base of the tree. Needles on branches or trees killed by the beetle will generally turn yellow or light green, in spruce; and yellow to red in pines, within a few weeks or months of attack.

The life cycles of *Ips* beetles generally last from 6 - 8 weeks. Therefore, there may be up to 5 generations produced in one season depending on the climate, elevation, and species. With more than one population in a given area, the generations may overlap. Consequently, beetles may attack host trees throughout the season. Normally, in Utah, *Ips* beetles will generally begin attacking host trees in mid-April.

Ips beetles are attracted to trees that are under stress. They prefer to attack trunks or branches that are one to four inches in diameter, which would include the top of larger trees. They may also attack larger diameter material. *Ips* populations often build in fresh green material including pruned branches (> ¾ inch diameter) and wind snapped or downed trees. Populations may also build in groups of small diameter stressed trees. Once populations are sufficiently large, they can attack and kill healthy trees. Beetles will usually initiate attacks at the tops of larger trees or individual branches.

The best defense against *Ips* beetle attack is to maintain the health and vigor of trees. The main stress factor for trees is usually water related. Watering needs are dependent upon soil composition and root development. Soil in newly planted trees needs to remain moist, but not wet, for the first few years until a good root system can be established. Larger, established trees, should receive a deep watering (2 – 4 inches of water) once every 2 - 6 weeks, depending upon the soil composition and ability to retain water. Apply water from the trunk of the tree outward at least to where rain would normally drip from the edge of the branches (preferably, continue water past the drip line). The top 18 inches of soil should remain moist, but not soaked. Over-watering trees may be just as damaging as under-watering. If water continually puddles around the tree, or the area is always muddy, then too much water is being applied. Trees currently under stress will need a few years of proper care to recover, enough to resist beetle attacks.

Trees heavily infested with beetles should be removed. Currently infested material will need to be removed from the site or treated to prevent beetles from exiting and attacking nearby hosts. Dispose of infested material in an area at least 2 - 3 miles away from suitable hosts. Treatment of infested material may include either; 1) removing all the bark; 2) chipping and spreading the chips in the sun; 3) burning sufficiently to kill insects, and; 4) placing pieces in a sunny location and covering or encasing with 10 ml or thicker clear plastic sheeting to create lethal temperatures.

If beetles are in the area, certain trees may be at risk, especially if they are under stress. Uninfested trees and partially or lightly infested trees can be protected from attack or re-attack by spraying them with a registered insecticide. Insecticides with the active ingredient Carbaryl are quite effective and several brand names are registered for bark beetle control. Some brand names include, but are not limited to; Carbaryl 4L, Sevin Brand 4F, and Sevin SL*. The insecticide must cover all sides of the trunk and branches as high as possible, preferably to the top of the tree. To effectively treat trees, apply to drip. If any portion of the trunk (including the top of larger trees) or susceptible branches is missed, then beetles can successfully attack the non-treated area. These sprays, when applied as a 1%-2% (active ingredient) solution, should provide protection from attacking *Ips* beetles for about16 - 18 months. For large trees, these insecticides are most effective when sprayed with a high-pressure sprayer (at least 250 psi) with a carwash type nozzle having a # 5 or #7 orifice.

**The mention of products and companies by name does not constitute endorsement by the Division of Forestry, Fire and State Lands or the USDA Forest Service, nor does it imply approval of a product to the exclusion of others that may also be suitable.*

Always use EXTREME CAUTION when applying pesticides/insecticides. Follow instructions and safety recommendations.

For further information please contact:

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